Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
An Inquiry Into the Commission's Policies	)	MM Docket No. 93-177
And Rules Regarding AM Radio Service	)	RM 7594
Directional Antenna Performance	)	
Verification	)	

REPLY COMMENTS OF COMMUNICATIONS TECHNOLOGIES, INC.

SUMMARY

On July 9, 2001 "Joint Comments of Broadcasters, Broadcast Engineering Consultants, and Equipment Manufacturers" ("Joint Comments") were filed under the auspices of the National Association of Broadcasters ("NAB"). The purpose of the instant Reply Comments is to address selected portions of the Joint Comments. It is the opinion of Communications Technologies, Inc. ("CTI") that the Joint Comments demonstrate a significant work effort on behalf of all of the involved parties. As a result, the Audio Services Division of the Mass Media Bureau now has before it the essential information necessary to proceed to amend Part 73 of the Rules to provide for computer modeling of certain AM directional arrays. CTI fully supports this worthwhile, and long overdue, revision of the Rules.

DYNAMIC PROCESS

In great part, the length of this proceeding has been attributable to many concerns over the reliability of computer modeling. Such concerns are reasonable and cannot be fully overcome until one has long term experience and exposure to tools not previously employed. In CTI's case we began, some years ago, to subcontract all of our detailed computer modeling projects to Professor Al Christman at Grove City College in Grove City, Pennsylvania. Through years of working with Professor Christman, we slowly became familiar with complex antenna system modeling and confidence in the process grew as field results showed good correlation with computed performance.

This same evolutionary process is expected for all parties as they begin to employ computer modeling. Adoption of the 18 step criteria proposed in the Joint Comments sets limits for the use of computer modeling that should allow all interested parties to undertake computer modeling with verifiable results. However, CTI believes that the initial limitations proposed in the Joint Comments may be relaxed at some future time as experience with computer modeling grows. CTI suggests that all license applications

filed using computer modeling be identified in some manner that will allow them to be readily identified with the passage of time.

CTI supports the proposal that arrays not meeting the proposed criteria be allowed to utilize computer modeling if accompanied by a partial proof-of-performance. License applications filed which fall under this category should also be identified in a unique manner for future analysis.

COMPUTER CODE TO BE ADOPTED

CTI does not object to the adoption of a specific, public domain, Method Of Moments computer code as part of the new Rules. The sole purpose for describing the code in the Rules would be to identify the code utilized by the FCC staff in reviewing a license application. However, CTI strongly objects to any requirement that submissions be limited to MININEC only. This objection is based on several factors. First, history has shown that once a Rule is implemented the FCC staff tends to rely, for administrative convenience, on the Rule without deviation. The broadcast industry would be unfairly limited if a very basic computer code were adopted as the only allowable code at a time when computational techniques and resources are rapidly expanding. Second, it is CTI's hope that this initial use of computer modeling will lead to future acceptance of computer modeling as a means of validating the performance of non conventional antenna systems. Proper analysis of non conventional antenna systems demands that factors not considered in this Rule Making, such as ground losses, wires not perpendicular to the ground and conductor resistance, be considered. NEC-4 is currently employed by CTI and numerous other parties for analysis of complex, and non conventional, antenna systems. The use of superior Method Of Moments programs, for cases not considered in this Rule Making, should be allowed, or at least not prevented, as a result of this Rule Making. Third, it is believed that NEC-2 and NEC-4 give results equally valid to those arrived at with MININEC when employed for the very simplified wire models, with perfect earth assumption, proposed in the Joint Comments. Therefore, computations using NEC-2 and NEC-4 should be equally acceptable with the understanding that they employ the criteria proposed in the Joint Comments.

CONCLUSION

Based on the Joint Comments, and the Reply Comments of CTI herein, it is recommended that computer modeling be permitted to replace field proofs for certain AM arrays.

Respectfully submitted by,

Original signed by affiant

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Clarence M. Beverage
On behalf of Communications Technologies, Inc.